TREMATODA.	*HOST.*
Lyperosomum corrigia (Braun)	*Tetrao tetrix.*
CESTODA.	
Bothriocephalus sp.	*Tetrao urogallus.*
Davainea cesticillus (Molin) ...	*Lagopus scoticus.*
Davainea globocaudatus (Cohn)	*Tetrao urogallus.*
Davainea retusa (Clerc)	*Tetrao tetrix.*
Davainea urogalli (Modeer) ...	*Tetrao tetrix*, *Tetrao urogallus*, and *Lagopus scoticus.*
Davainea villosa (Bloch)	*Tetrao tetrix.*
Hymenolepis microps (Diesing)	*Tetrao tetrix*, *Tetrao urogallus*, and *Lagopus scoticus.*
Tænia bonasiæ (Müll.)	*Bonasia sylvestris.*
Tænia echinata (Olss.)	*Lagopus mutus.*
ACANTHOCEPHALA.	
Echinorhynchus stellaris (Molin)	*Tetrao tetrix.*

5. On a Fossil Bird from the Lower Pliocene.

By W. P. Pycraft, F.Z.S., A.L.S.*

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(Text-figure 47.)

The following account concerns the fossilized remains of a small Passerine bird from the Lower Pliocene of Gabbro, near Leghorn. The slab in which these remains are embedded was placed in my hands for investigation by my friend Dr. Forsyth Major, F.R.S., who has, throughout my enquiry, rendered me much help.

Unfortunately, only the pelvic limbs and a few traces of feathers are here preserved; further, the bones are much crushed, and the phalanges have been almost entirely lost. But from the slab and its counterpart, which has happily been preserved, sufficient details may be gathered to make identification possible.

The right leg lacks the toes. The femur, on the slab, is much crushed and can only very imperfectly be traced; but on the counterpart of the slab it becomes clear that it is seen from its dorsal aspect, since the middle of the shaft shows a smooth, periosteal, surface; while the extremities thereof are missing, leaving beautiful impressions of the distal and proximal articular ends. The tibio-tarsus is seen from its fibular side. Herein traces are visible of the head of the fibula, closely approximated to the femoral trochlea, and of the external border of the ectocnemial

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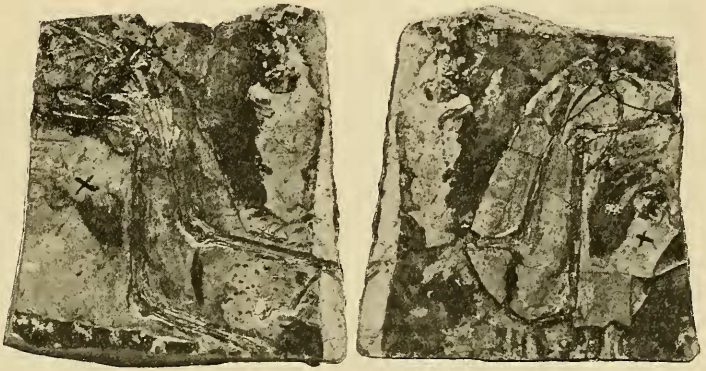
crest. The fibular crest has been crushed. The distal end of the shaft, though crushed, shows the form of the trochlea. On the counterpart the proximal extremity of the shaft is much damaged; while of the distal end only an impression remains.

Text-fig. 47.



The Slab (left-hand figure) and the counterpart thereof (right-hand figure) containing remains of a fossil Pipit (*Anthus bosniaskii*).

The hind-toe of the left leg is clearly seen in the Slab, while to the left of the tibial shaft of the right leg traces of feathers are preserved (marked ×), but these are much more clearly seen on the counterpart.

The left leg is more complete, but lacks the front toes. On the slab the femur is seen from its ventral aspect; the head is missing, but the condyles of the distal extremity can be fairly well made out. The tibio-tarsus is seen from its inner aspect. It is therefore somewhat curious to find that the fibula has become detached from the fibular crest, and lies with its head in close juxtaposition to the fibular condyle of the femur, as may be seen in the photograph (text-fig. 47). The entocnemial crest is fairly well preserved. The counterpart of this slab lacks the proximal extremity of the tibio-tarsus, owing to the flaking away of the matrix, while the distal end of the shaft can only very indistinctly be made out. The tarso-metatarsus, though preserved in its entirety, is too much crushed at its proximal extremity to make it possible to distinguish the mesotarsal articulation. The shaft is also flattened and crushed. The ecto- and entocnemial trochleæ can be made out, but the mesotrochlea is obliterated.

Of the digits only the hallux is preserved, but the metatarsal thereof cannot be traced, while the ungual phalanx is much crushed and flattened. This digit, however, serves at once to show the Passerine character of these remains, and this because of the great length of the proximal phalanx and its position in regard to the other toes. Of the other digits only fragments of

the proximal phalanges remain. The only trace of the tarso-metatarsus and hallux, which is preserved in the counterpart, takes the form of a very shallow depression in the matrix, showing that an overlying flake of stone and the bone imbedded therein have been lost.

There is a cluster of fragments of other bones in this slab, and these appear, at first sight, to be portions of thoracic vertebræ—crushed centra and neural spines. A closer examination shows that these "spines" are too high to belong to the vertebral column of any Passerine bird of this size.

And now a word as to the traces of feathers which are to be found on the slab and counterpart containing the bones just described. These impressions occur in the form of a large patch occupying the middle of the area shut in by the femur and the shank of the left leg. On the slab a portion of this patch has been lost, but in the counterpart it is complete, and indicates a mass of feathers, probably of the flanks, matted together as if by wet. They show, moreover, that these remains must have been exposed to the action of tides, where low water would leave the feathers in a matted "draggled" condition. Before finally covered by the next high tide they must have become effectually covered by mud; and this because feathers under water would float out, much as in life.

Along the lower end of the "shank" of each leg there are also impressions of feathers, which cease at the mesotarsal articulation.

Summary.

There seems little room for doubt but that the remains just described are those of a Pipit (*Anthus*); at any rate, they agree more closely with bones of this genus than with those of any other group of Passerine birds with which I have compared them. And among the members of this genus these remains resemble most nearly those of the living species known as Berthelot's Pipit (*Anthus bertheloti*).

In the shape of the condyles of the distal end of the femur, and of the trochleæ of the distal extremity of the tarso-metatarsus, slight differences are discernible when the fossil remains and the skeletons used for the purposes of comparison in this paper are compared. But these differences are very slight, and they may be due to pressure.

Assuming that I am correct in ascribing these remains to an extinct species of the genus *Anthus*, I propose to adopt the name of the discoverer—Dr. Bosniaski—as the specific name. *Anthus bosniaskii* was obtained by Dr. Bosniaski from the Lower Pliocene of Gabbro near Leghorn, a deposit which has yielded many fossils and which is particularly rich in fish-remains.

So far as I can make out, the only other remains of Passerine birds from the Lower Pliocene are a few fragments representing the genera *Corvus* and *Turdus* from Rousillon, Perpignan.